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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,476	03/16/2004	Kenichi Mitsumori	9281/4823	1781
7590 11/28/2007 Anthony P. Curtis, Ph.D. BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610			EXAMINER STINSON, FRANKIE L	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 11/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/801,476

Applicant(s)

MITSUMORI ET AL.

Examiner

FRANKIE L. STINSON

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2, 4, 6, 8, 10 and 14 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2, 4, 6 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4, 6, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Yamaguchi et al. (U. S. Pat. No. 6,087,760), Bouyoucos (U. S. Pat. No. 3,383,841) or Rorick (U. S. Pat. No. 5,956,293) in view of either Straube (U. S. Pat. No. 3,370,187) or Ito et al. (U. S. Pat. No. 4,556,814)

Re claims 1 and 6, note that Yamaguchi, Bouyoucos and Rorick are each cited disclosing an ultrasonic vibrator comprising:

a vibrating portion (see figs 7, 9, 10, 22A-B in Yamaguchi, 160 in Bouyoucos and 154 in Rorick);

a sidewall portion (71, 91, 101, 167, 168 in Yamaguchi, 164 in Bouyoucos and 152 in Rorick) standing on a principal surface of said vibrating portion;

a vibrator body (70, 152 in Yamaguchi, 114 in Bouyoucos and 162, 164 in Rorick) disposed on the principal surface of said vibrating portion inside said side wall portion to apply ultrasonic vibration to said vibrating portion,

wherein a thin portion (71a, 91a, 101a in Yamaguchi, 164 in Bouyoucos and 190, 192 in Rorick) is formed at least on a part of a border between said vibrating portion and said sidewall portion,

wherein the vibrating portion and the side wall portion are integrally formed as a

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box, and

wherein the thin portion is formed by the principal surface of the vibrating portion, and wherein the opposite side, with respect to the thin portion, of the principal surface of the vibrating portion is planar that differ from the claims only in the sidewall having a reduced width and the thickness of the vibrating portion being the same as the thickness of the side plate. The patents to Straube (see fig. 4) and Ito (see fig. 11) each disclose the sidewall and thickness. It therefore would have been obvious to one having ordinary skill in the art to modify the sidewall in Yamaguchi, Bouyoucos or Rorick to include a reduced portion and thickness as taught by either Straube or Ito, for the purpose of enhancing the transmission of the ultrasonic waves as is common in the art. All of the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applied prior art as applied to claim 1 above, and further in view of Scapra (U. S. Pat. No. 3,433,461).

Re claim 4, Yamaguchi, Bouyoucos and Rorick are each cited disclosing all of the claimed subject matter as noted above with the exception of the thickness of the vibrating portion as claimed, namely,  $\lambda/2 \pm 0.3\text{mm}$ . Nonetheless, Scapra is cited disclosing the thickness (col. 5, line 5). It therefore would have been obvious to one having ordinary skill in the art to modify the thickness of the vibrating portion in either

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Yamaguchi, Bouyoucos or Rorick, to as disclosed by Scapra, since it is old and well known in the art to vary the thickness or the vibrating portion, through routine experimentation, to achieve a maximum or desired transmission of sonic energy. All of the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention. Re claim 14 Straube and Ito disclose the thin portion as claimed.

4. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Knecht et al., Takayama et al., Kumada, and Straube'664, note the thin portions.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRANKIE L. STINSON whose telephone number is (571) 272-1308. The examiner can normally be reached on M-F from 5:30 am to 2:00 pm and some Saturdays from approximately 5:30 am to 11:30 am.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached on (571) 272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

fls



FRANKIE L. STINSON  
Primary Examiner  
GROUP ART UNIT 1792